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REMARKS

This response is intended as a full and complete response to the final Office Action mailed December 8, 2005. In the Office Action, the Examiner notes claims 1-22 are pending of which claims 1-10 are rejected and claims 11-22 are withdrawn from consideration. By this response, all claims continue unamended.

In view of the following discussion, Applicant submits that none of the claims now pending in the application are anticipated or obvious under the provisions of 35 U.S.C. §102 and §103.

It is to be understood that Applicant does not acquiesce to the Examiner's characterizations of the art of record or to Applicant's subject matter recited in the pending claims. Further, Applicant is not acquiescing to the Examiner's statements as to the applicability of the art of record to the pending claims by filing the instant responsive amendment.

REJECTIONS

35 U.S.C. §102

Claims 1-2, 5-7 and 10

The Examiner has rejected claims 1-2, 5-7, and 10 under 35 U.S.C. §102(b) as being anticipated by McBrien et al. US 2002/0114047 (hereinafter "McBrien"). Applicant respectfully traverses the rejection.

Applicant's independent claim 1 (and similarly independent claim 6) recites:

1. A method of controlling a bias voltage of a Mach-Zender modulator (MZM) performing a non-return-to-zero (NRZ) modulation of an optical signal, comprising:
 - generating a digital pilot signal;
 - modulating the MZM using the digital pilot signal;
 - coupling a portion of an optical output signal from the MZM to a light detector;
 - processing an output signal of the light detector using a digital correlation filter to recover the digital pilot signal;
 - and

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demodulating the recovered digital pilot signal to produce a feedback signal controlling the bias voltage of the MZM. (emphasis added).

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The McBrien reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

The present invention includes processing an output signal of the light detector using a digital correlation filter to recover the digital pilot signal. The digital correlation filter 128 samples an output signal of the ADC 126. In one embodiment, a sampling rate of the filter is about 20 kHz and the data acquisition cycle comprises 160 data points. The data points are temporarily stored, in digital format, in a memory device of the correlation filter 128 and then are averaged. In this embodiment, at the input of the synchronous demodulator 130, a S/N ratio of the recovered (i.e., averaged) digital pilot tone signal and the first harmonic of such a signal is about 2 and, as such, 2 to 3 times greater than in conventional systems employing an analog pilot tone signal or an analog processing technique.

The examiner asserts that the McBrien reference discloses using a digital pilot signal and using a digital correlation filter to recover the digital pilot signal. Applicant respectfully disagrees.

McBrien reference does not disclose a digital pilot signal. McBrien discloses an analog pilot signal (50). That signal is use to assist in the modulation of data. Examiner asserts that the digital data source 70 is equivalent to the digital pilot signal of the present invention. The digital data source 70 produces the digital data stream with digital data information. It does not produce a digital pilot signal. Thus, digital data source 70 is not a digital pilot signal. The pilot signal in

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McBrien is an analog signal, which does not anticipate the digital pilot signal of the present invention.

Moreover, McBrien does not disclose digital correlation filter. The examiner asserts that the pass band filter 124 is equivalent to the digital correlation filter of the present invention. A pass band filter is an analog filter, which allows a certain frequency bands to pass while other frequency bands are blocked. It is not a digital correlation filter. A digital correlation filter samples a digital signal and stores the sampled data points for processing. Thus, a pass band filter of McBrien does not anticipate the digital correlation filter of the present invention.

The McBrien reference fails to teach or suggest Applicant's "digital pilot signal" and "a digital correlation filter". Moreover, because McBrien does not even hint at the possibility of using a digital pilot signal, McBrien is also silent on modulating, recovering, and demodulating that digital pilot signal.

As such, Applicant submits that independent claims 1 and 6 are not anticipated and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder. Furthermore, claims 2, 5 and 10 depend directly from independent claims 1 and 6 and recite additional features thereof. Accordingly, at least for the same reasons as discussed above, Applicant submits that these dependent claims are also not anticipated and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder. Therefore, Applicant respectfully requests that the Examiner's rejection be withdrawn.

35 U.S.C. §103

Claims 3-4 and 8-9

The Examiner has rejected claims 3-4 and 8-9 under 35 U.S.C. §103(a) as being unpatentable over McBrien, as applied to claims 1 and 6 above, respectively, in view of Kingsley et al. US 6,871,084 (hereinafter "Kingsley"). Applicant respectfully traverses the Examiner's rejection.

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The McBrien and Kingsley references alone or in combination fail to teach or suggest Applicant's invention as a whole. For at the least the reasons discussed above in connection with the Examiner's §102 rejection of claims 1 and 6 in view of McBrien, Applicant submits that McBrien fails to teach or suggest Applicant's invention as a whole. Specifically, McBrien fails to teach or suggest Applicant's "digital pilot signal."

The Kingsley reference fails to bridge the substantial gap between McBrien and Applicant's invention. In particular, Kingsley discloses high impedance optical electrodes modulate light in response to life-form bio-potential and then converts the modulated light to an electrical signal that provides traditional EEG and EEC type output. Kingsley fails to teach or suggest Applicant's "digital pilot signal" and "digital correlation filter." Therefore, even if operably combinable, the combination fails to teach or suggest the invention as a whole.

Furthermore, Kingsley is non-analogous art. Kingsley is in a different field of endeavor and is solving a completely different problem as the present invention. Kingsley is in the area of electrodes used in the measurement of bio-potential signals produced by the living body. The problem Kingsley is trying to solve is directed towards elimination of macro shock situations. The components of Kingsley are completely unrelated to trying to improve on controlling the bias voltage of Mach-Zehnder modulators used in high-speed optical communications. Therefore, there is no motivation to combine those components in Kingsley with McBrien, and even when combined, the combination would not be operable.

The examiner argues that because certain components in the unrelated Kingsley reference are also components in the present invention, the Kingsley reference is pertinent to the art. As stated before, Kingsley is not pertinent to the art of biasing modulators in high-speed optical communications. Thus, Kingsley is non-analogous art.

As such, claims 3-4 and 8-9 depend directly or indirectly from independent claims 1 and 6 and recite additional features thereof. Accordingly, at least for the same reasons as discussed above, Applicant submits that these dependent claims

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are also not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, Applicant respectfully requests that the Examiner's rejection be withdrawn.

CONCLUSION

Thus, Applicant submits that none of the claims presently in the application are anticipated or obvious under the provisions of 35 U.S.C. §102 and §103. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited. If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Eamon J. Wall or Jasper Kwoh at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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